

**CLAIMS:**

1. A method comprising:  
generating gray elements and a dithered gray background for display on a  
5 display device, the dithered gray background representing a gray level of approximately 25 to 40%; and  
estimating a gamma for the display device based on user selection of one of the gray elements that appears to most closely blend with the dithered gray background.
- 10 2. The method of claim 1, wherein the dithered gray background represents a gray level of approximately 33%.
3. The method of claim 1, wherein the gray elements include green  
15 elements representing a range of gray levels for the green channel, and the dithered gray background is a dithered green background.
4. The method of claim 1, further comprising characterizing the  
colorimetric response of the display device based on the estimated gamma.
- 20 5. The method of claim 1, the method further comprising:  
modifying a color image based on the estimated gamma; and  
delivering the modified color image to the display device.
6. The method of claim 1, wherein the display device is associated with a  
25 client residing on a computer network, the method further comprising:  
transmitting information representing the estimated gamma to a remote server  
on the network;  
modifying the color image at the remote server based on the information; and  
30 delivering the modified color image to the client via the computer network for  
display on the display device.

7. The method of claim 1, wherein estimating the gamma includes:  
selecting one of a first plurality of gray elements displayed by the display device  
that appears to most closely blend with the dithered gray background;  
estimating a coarse gamma for the display device based on the selected one of  
5 the first plurality of gray elements;  
selecting one of a second plurality of gray elements displayed by the display  
device that appears to most closely blend with the dithered gray background, wherein  
the second plurality of gray elements includes the selected one of the first plurality of  
gray elements; and  
10 estimating a fine gamma for the display device based on the selected one of the  
second plurality of gray elements, wherein the estimated fine gamma is the estimated  
gamma.

8. The method of claim 7, wherein the first plurality of gray elements  
15 represent greater gradations in gray intensity than the second plurality of gray elements.

9. The method of claim 1, wherein the gray elements are green elements  
representing a range of gray levels for the green channel, and the dithered gray  
background is a dithered green background, the method further comprising:  
20 selecting one of the selected green element and a plurality of red-blue shifted  
elements displayed by the display device that appears to most closely blend with the  
second dithered green background displayed by the display device; and  
estimating the gray balance of the display device based on the selected one of  
the selected green element or selected red-blue shifted element.  
25

10. The method of claim 9, wherein the red-blue shifted elements represent  
shifts in red, blue, or a combination of red and blue away from the color value of the  
selected green element.

11. The method of claim 9, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

5           12. The method of claim 1, further comprising:  
            estimating both the blackpoint and the gray balance of the display device; and  
            characterizing the colorimetric response of the display device based on the  
            estimated gamma, blackpoint, and gray balance.

10           13. The method of claim 12, wherein the display device is associated with a  
            client residing on a computer network, the method further comprising:  
            transmitting information representing the estimated blackpoint, gamma, and  
            gray balance to a remote server on the network;  
            modifying the color image at the remote server based on the information; and  
15           delivering the modified color image to the client via the computer network for  
            display on the display device.

20           14. The method of claim 1, wherein the display device is associated with a  
            client on a computer network, the method further comprising guiding the client through  
            the process of obtaining the estimated gamma by delivering one or more instructional  
            web pages to the client.

25           15. A system comprising:  
            a web server residing on a computer network, the web server transmitting web  
            pages to remote clients residing on the computer network;  
            a color image server residing on the computer network, the color image server  
            transmitting color images referenced by the web pages to the clients for display on  
            display devices associated with the clients;  
            a color profile server residing on the computer network, the color profile server  
30           guiding the clients through a color profiling process to obtain information  
            characterizing the color responses of the display devices associated with the clients,

wherein the information includes a gamma for the display device, the gamma being determined by selecting one of a plurality of gray elements displayed by the display device that appears to most closely blend with a dithered gray background that represents a gray level of approximately 25 to 40%; and

5           one or more color correction modules that modify the color images transmitted by the color image server based on the information to improve the accuracy of the color images when displayed on the respective display device.

10           16.     The system of claim 15, wherein the color image server stores the information to the client in a web cookie, the client transmits the web cookie from the client to the server, and the color image server modifies the color image via the server based on the contents of the web cookie.

15           17.     The system of claim 5, wherein the dithered gray background represents a gray level of approximately 33%.

20           18.     The system of claim 15, wherein the gray elements include green elements representing a range of gray levels for the green channel, and the dithered gray background is a dithered green background.

25           19.     The system of claim 18, wherein the color profiling process includes:  
              selecting one of the selected green element and the plurality of red-blue shifted elements displayed by the display device that appears to most closely blend with the dithered green background displayed by the display device; and  
              estimating the gray balance of the display device based on the selected one of the selected green element or selected red-blue shifted element.

30           20.     The system of claim 19, wherein the red-blue shifted elements represent shifts in red, blue, or a combination of red and blue away from the color value of the selected green element.

21. The system of claim 19, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

5 22. The system of claim 18, wherein estimating the gamma includes:  
selecting one of a first plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background;  
estimating a coarse gamma for the display device based on the selected one of the first plurality of green elements;  
10 selecting one of a second plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background, wherein the second plurality of green elements includes the selected one of the first plurality of green elements; and  
estimating a fine gamma for the display device based on the selected one of the  
15 second plurality of green elements, wherein the estimated fine gamma is the estimated gamma.

23. The system of claim 22, wherein the first plurality of green elements represent greater gradations in green intensity than the second plurality of green  
20 elements.

24. The system of claim 15, wherein the color profiling process includes:  
estimating both the blackpoint and the gray balance of the display device; and  
characterizing the colorimetric response of the display device based on the  
25 estimated gamma, blackpoint, and gray balance.

25. A computer-readable medium containing instructions that cause a programmable processor to:  
display a plurality of gray elements on a display device against a dithered gray  
30 background representing a gray level of approximately 25 to 40%;

select one the gray elements that appears to most closely blend with a dithered gray background; and

estimate a gamma for the display device based on the selected gray element.

5           26.     The computer-readable medium of claim 25, wherein the dithered gray background represents a gray level of approximately 33%.

10           27.     The computer-readable medium of claim 25, wherein the gray elements include green elements representing a range of gray levels for the green channel, and the dithered gray background is a dithered green background.

15           28.     The computer-readable medium of claim 25, wherein the instructions cause the processor to characterize the colorimetric response of the display device based on the estimated gamma.

20           29.     The computer-readable medium of claim 25, wherein the instructions cause the processor to:

modify a color image based on the estimated gamma; and  
deliver the modified color image to the display device.

25           30.     The computer-readable medium of claim 25, wherein the display device is associated with a client residing on a computer network, and wherein the instructions cause the processor to:

transmit information representing the estimated gamma to a remote server on the network;

modify the color image at the remote server based on the information; and  
deliver the modified color image to the client via the computer network for display on the display device.

30           31.     The computer-readable medium of claim 25, wherein the instructions cause the processor to estimate the gamma by:

selecting one of a first plurality of gray elements displayed by the display device that appears to most closely blend with the dithered gray background;

estimating a coarse gamma for the display device based on the selected one of the first plurality of gray elements;

5 selecting one of a second plurality of gray elements displayed by the display device that appears to most closely blend with the dithered gray background, wherein the second plurality of gray elements includes the selected one of the first plurality of gray elements; and

10 estimating a fine gamma for the display device based on the selected one of the second plurality of gray elements, wherein the estimated fine gamma is the estimated gamma.

15 32. The computer-readable medium of claim 31, wherein the first plurality of gray elements represent greater gradations in gray intensity than the second plurality of gray elements.

20 33. The computer-readable medium of claim 25, wherein the gray elements are green elements representing a range of gray levels for the green channel, and the dithered gray background is a dithered green background, the instructions causing the processor to:

select one of the selected green element and a plurality of red-blue shifted elements displayed by the display device that appears to most closely blend with the second dithered green background displayed by the display device; and

25 estimate the gray balance of the display device based on the selected one of the selected green element or selected red-blue shifted element.

30 34. The computer-readable medium of claim 33, wherein the red-blue shifted elements represent shifts in red, blue, or a combination of red and blue away from the color value of the selected green element.

35. The computer-readable medium of claim 33, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

5        36 38. The computer-readable medium of claim 25, wherein the instructions cause the processor to:

estimate both the blackpoint and the gray balance of the display device; and  
characterize the colorimetric response of the display device based on the  
estimated gamma, blackpoint, and gray balance.

10        37 39. The computer-readable medium of claim 36, wherein the display device is associated with a client residing on a computer network, and the instructions cause the processor to

transmit information representing the estimated blackpoint, gamma, and gray  
balance to a remote server on the network;

15        modify the color image at the remote server based on the information; and  
deliver the modified color image to the client via the computer network for  
display on the display device.

20        38 39. The computer-readable medium of claim 25, wherein the display device is associated with a client on a computer network, and the instructions cause the processor to guide the client through the process of obtaining the estimated gamma by delivering one or more instructional web pages to the client.

25        39 40. The computer-readable medium of claim 25, wherein the instructions are contained both in physical data storage media and signals transmitted between the client and other resources on the computer network.